

WHAT IS CLAIMED IS:

1. A characteristic control device which is provided with:
 - a basic control module which determines the amount of control used to control the output of a control subject based on predetermined input data and control parameters which relate output to the control subject to the input data and which controls the characteristics of the control parameters,
 - a characteristic storage mechanism for storing the basic control parameters, and
 - a characteristic automatic modification mechanism which determines, in accordance with predetermined conditions, and automatically modifies, the control parameters which are applied to the basic control module based on the basic control parameters stored in the characteristic storage mechanism and the input data.
2. A characteristic control device in accordance with Claim 1, wherein the characteristic automatic modification mechanism modifies the ratio of the basic control parameters using fuzzy rules and automatically modifies the control parameters applied to the basic control module.
3. A characteristic control device in accordance with Claim 2, which is further provided with a user interface mechanism which permits a user to directly manipulate the fuzzy rules in the characteristic automatic modification mechanism.
4. A characteristic control device in accordance with Claim 2, wherein the user interface mechanism is provided with a display device that displays the basic control parameters modified by the fuzzy rules in the characteristic automatic modification mechanism.
5. A characteristic control device which is provided with:
 - a characteristic control module which controls the characteristics of the control parameters and is provided separately from a control device which is provided with a basic control module which determines the amount of control used to control the output of a control subject based on predetermined input data and control parameters which relate the output to the control subject to the input data,

a characteristic storage mechanism which stores the basic control parameters, and

5 a characteristic automatic modification mechanism which determines and automatically modifies the control parameters which are applied to the basic control module, based on the basic control parameters stored in the characteristic storage mechanism and the input data.

6. A characteristic control device in accordance with Claim 5, wherein the characteristic automatic modification mechanism modifies the ratio of the basic control parameters using fuzzy rules and automatically modifies the control parameters applied to the basic control module.

7. A characteristic control device in accordance with Claim 5, which is further provided with a user interface mechanism which permits a user to directly manipulate the fuzzy rules in the characteristic automatic modification mechanism.

8. A characteristic control device in accordance with Claim 2, wherein the user interface mechanism is provided with a display device that displays the basic control parameters modified by the fuzzy rules in the characteristic automatic modification mechanism.

9. A characteristic control device which is provided with:
a basic control module which determines the amount of control used to control the output of a control subject based on predetermined input data and control parameters which relate output to the control subject to the input data and which controls the characteristics of the control parameters,

a characteristic generation mechanism which generates basic control parameters which serve as the basis of the control parameters by conducting predetermined evaluations based on the input data,

a characteristic storage mechanism for storing the basic control parameters, and

a characteristic automatic modification mechanism which determines, in accordance with predetermined conditions, and automatically modifies, the control parameters which are applied to the basic control module based on the

basic control parameters stored in the characteristic storage mechanism and the input data.

5 10. A characteristic control device in accordance with Claim 9, wherein the characteristic generation mechanism generates the basic control parameters using an evolutionary calculation method.

 11. A characteristic control device in accordance with Claim 10, wherein the characteristic generation mechanism is provided with an evaluation unit, which is provided with evaluation functions for conducting an evaluation of the basic control parameters, based on the input data.

10 12. A characteristic control device in accordance with Claim 9, wherein the characteristic automatic modification mechanism modifies the ratio of the basic control parameters using fuzzy rules and automatically modifies the control parameters applied to the basic control module.

 13. A characteristic control device which is provided with:
15 a basic control module which determines the amount of control employed to control the output of the control subject based on predetermined input data and control parameters which relate the output to the control subject to the input data, and which controls the characteristics of the control parameters,

20 a characteristic generation mechanism for generating the basic control parameters that serve as a basis for the control parameters, in accordance with predetermined evaluation standards,

 a characteristic storage mechanism for storing the basic control parameters,

25 a characteristic automatic modification mechanism for determining, in accordance with predetermined conditions, and automatically modifying, the control parameters which are applied to the basic control module based on the basic control parameters stored in the characteristic storage mechanism and the input data, and

30 a user interface mechanism that permits a user to directly manipulate the basic control parameters generated by the characteristic generation mechanism.

14. A characteristic control device in accordance with Claim 13, wherein the characteristic generation mechanism conducts an evaluation of the basic control parameters based on the operational data from the user interface, and generates the basic control parameters using an evolutionary calculation method based on the results of this evaluation.

15. A characteristic control apparatus in accordance with Claim 13, wherein the characteristic automatic modification mechanism modifies the ratio of the basic control parameters using fuzzy rules, and is capable of automatically modifying the control parameters applied to the basic control module.

16. A characteristic control device in accordance with Claim 13, wherein the user interface mechanism is provided with a display mechanism which displays at least one of the characteristic data expressing the characteristics of the basic control parameters evaluated and generated by the characteristic generation mechanism, and the ratio of the basic control parameters modified by the fuzzy rules provided in the characteristic automatic modification mechanism.

17. A characteristic control device which is provided with:

a characteristic control module which controls the characteristics of the control parameters and is provided separately from a control device which is provided with a basic control module which determines the amount of control used to control the output of a control subject based on predetermined input data and control parameters which relate the output to the control subject to the input data,

a characteristic generation mechanism for generating basic control parameters that serve as the basis of the control parameters, in accordance with predetermined evaluation standards,

a characteristic storage mechanism which stores the basic control parameters, and

a characteristic automatic modification mechanism which determines and automatically modifies the control parameters which are applied to the basic control module, based on the basic control parameters stored in the characteristic storage mechanism and the input data.

18. A characteristic control device in accordance with Claim 17, wherein the characteristic control device is provided with a user interface mechanism that allows the user to directly manipulate the basic control parameters generated by the parameter generation mechanism.

5 19. A characteristic control device in accordance with Claim 18, wherein the characteristic generation mechanism evaluates the basic control parameters based on the operational data from the user interface mechanism, and employs an evolutionary calculation method based on the results of this evaluation to generate basic control parameters.

10 20. A characteristic control device in accordance with Claim 17, wherein the user interface mechanism is provided with a display mechanism which is capable of displaying at least one of characteristic data which express characteristics of the basic control parameters evaluated and generated by the characteristic generation mechanism, and a ratio of the basic control parameters modified by the fuzzy rules provided in the
15 characteristic automatic modification mechanism.

21. A characteristic control device in accordance with Claim 17, wherein the characteristic control device is made attachable to and detachable from the control device which controls the output of the control subject.

22. A characteristic control device in accordance with Claim 17, wherein the
20 characteristic control device comprises a standard computer.

23. A characteristic control device in accordance with Claim 17, wherein the characteristic control device is provided with a communication mechanism which permits data communication with the control device.

24. A method for conducting control of a control subject, comprising the
25 steps of:

- (a) acquiring input data;
- (b) acquiring at least one basic control parameter;
- (c) automatically calculating at least one control parameter from the input data and the basic control parameter; and
- 30 (d) conducting control of the control subject based on the control parameter.

25. A method in accordance with Claim 24, wherein the control subject is a two-wheeled vehicle.
26. A method in accordance with Claim 24, wherein the control subject is a robot.
- 5 27. A method in accordance with Claim 24, wherein the control subject is a motorized wheelchair.
28. A method in accordance with Claim 24, wherein the control subject is an automobile.
29. A method in accordance with Claim 24, wherein at least one of the input
10 data relate to travel characteristics of the control subject.
30. A method in accordance with Claim 29, wherein the input data relate to vehicle speed.
31. A method in accordance with Claim 29, wherein the input data relate to a rate of change in a degree of throttle opening.
- 15 32. A method in accordance with Claim 29, wherein the input data relate to fuel injection characteristics.
33. A method in accordance with Claim 29, wherein the input data relate to engine brake characteristics.
34. A method in accordance with Claim 29, wherein the input data relate to
20 exhaust noise level.
35. A method in accordance with Claim 29, wherein the input data relate to weather conditions.
36. A method in accordance with Claim 24, wherein at least one of the input data relate to the bodily condition of an operator of the control subject.
- 25 37. A method in accordance with Claim 36, wherein the input data relate to body temperature.
38. A method in accordance with Claim 36, wherein the input data relate to pulse rate.
39. A method in accordance with Claim 36, wherein the input data relate to
30 an amount of perspiration.

40. A method in accordance with Claim 24, wherein at least one of the input data relate to identification of an operator of the control subject.

41. A method in accordance with Claim 40, wherein the input data are derived from the pattern of operation.

5 42. A method in accordance with Claim 40, wherein the input data relate to the fingerprint of the operator.

43. A method in accordance with Claim 40, wherein the input data relate to the iris of the operator.

44. A method in accordance with Claim 24, wherein, in the step of acquiring
10 at least one basic control parameter, at least one basic control parameter is acquired from a storage mechanism adapted to store a plurality of basic control parameters.

45. A method in accordance with Claim 44, wherein at least one basic control parameter acquired is preset in the storage mechanism.

46. A method in accordance with Claim 44, wherein at least one basic
15 control parameter acquired is set in the storage mechanism by an operator of the control subject.

47. A method in accordance with Claim 24, wherein, in the step of acquiring
at least one basic control parameter, at least one basic control parameter is acquired
from a characteristic generation mechanism which generates at least one basic control
20 parameter.

48. A method in accordance with Claim 47, wherein at least one basic control parameter is generated by generating a plurality of control parameter candidates and evaluating the control parameter candidates based on predetermined input data.

49. A method in accordance with Claim 47, wherein at least one basic
25 control parameter is generated using input from an operator via a user interface.

50. A method in accordance with Claim 24, wherein, in the step of acquiring at least one basic control parameter, at least one basic control parameter is acquired via a network.

51. A method in accordance with Claim 24, wherein, in the step of
30 automatically calculating at least one control parameter from the input data and the basic control parameter, at least a characteristic output ratio is calculated.

52. A method in accordance with Claim 51, wherein a characteristic output ratio is calculated using at least one fuzzy rule.

53. A method in accordance with Claim 52, wherein a characteristic output ratio is calculated by calculating a degree of suitability of the input data to the fuzzy rule.

54. A method in accordance with Claim 24, wherein, in the step of automatically calculating at least one control parameter from the input data and the basic control parameter, the control parameter is calculated using input from an operator via a user interface.

55. A method in accordance with Claim 24, wherein, in the step of automatically calculating at least one control parameter from the input data and the basic control parameter, the control parameter is calculated via a network.

56. A method in accordance with Claim 24, wherein, in the step of conducting control of the control subject based on the control parameter, control is conducted via a network.

57. A method in accordance with Claim 24, wherein, in the step of conducting control of the control subject based on the control parameter, control is conducted via a wireless interface.